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10/595,158	03/09/2006	Hajime Kimura	12732-0325US1	3518

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EXAMINER	
ZUBAJLO, JENNIFER L	
ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No.	Applicant(s)	
	10/595,158	KIMURA, HAJIME	
	Examiner	Art Unit	
	JENNIFER ZUBAJLO	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 February 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18,20-24 and 26-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18,20-24 and 26-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/25/11 & 5/20/11*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-11 and 18-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jie-Farn Wu (Pub. No.: US 2005/0259054 A1), in view of Paul R. Routley (Pub. No.: US 2006/0001613 A1).

As to claim 1, Wu teaches A semiconductor device comprising: a transistor (see fig. 7A – transistor G); a current source electrically connected to the transistor (see fig. 7A – current source I); and a precharge circuit comprising a first terminal electrically connected to the transistor and a second terminal (see fig. 7A – note that the precharge circuit area is the area which includes the elements 60, 62b, 62c, 64, 68, 66b, and 66c), wherein the precharge circuit supplies a charge to the transistor according to a comparison between a potential of the first terminal and a potential of the second terminal(see fig. 7A – note it is obvious that this comparison occurs with the op-amp 64).

Wu does not directly teach wherein the current source is configured to supply a current corresponding to a gray scale level.

Routley teaches a current source configured to supply a current corresponding to a gray scale level (see [0057]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a well known current source corresponding to a grayscale level as taught by Routley in place of the current source as taught by Wu in order to provide a variable brightness or grayscale display.

As to claim 6, Wu teaches a semiconductor device comprising: a transistor (see fig. 7A – transistor G); a current source electrically connected to the transistor (see fig. 7A – current source I); a charge supply means (see fig. 7A – note that the charge supply can obviously be the current source I or the Voltage Vpp); and
a precharge circuit configured to supply a charge to the transistor (see fig. 7A – note that the precharge circuit area is the area which includes the elements 60, 62b, 62c, 64, 68, 66b, and 66c), the precharge circuit comprising: a comparison control circuit having a first input terminal electrically connected to the transistor, a second input terminal and an output terminal (see fig. 7A – op-amp 64 and note it is obvious that the op-amp is a comparison control circuit); and a switch electrically connected to the output terminal (see fig. 7A – switch 62), wherein the charge supply means is electrically connected to the transistor through the switch (see fig. 7A – both Vpp and I are electrically connected to transistor G).

Wu does not directly teach wherein the current source is configured to supply a current corresponding to a gray scale level.

Routley teaches a current source is configured to supply a current corresponding to a gray scale level (see [0057]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a well known current source corresponding to a grayscale level as taught by Routley in place of the current source as taught by Wu in order to provide a variable brightness or grayscale display.

As to claim 18, Wu teaches a display device comprising: a light emitting element (see fig. 7A – LED 30); a transistor electrically connected to the light emitting element; a current source electrically connected to the transistor (see fig. 7A – current source I); and a precharge circuit comprising a first terminal electrically connected to the transistor and a second terminal (see fig. 7A – note that the precharge circuit area is the area which includes the elements 60, 62b, 62c, 64, 68, 66b, and 66c), wherein the precharge circuit supplies a charge to the transistor according to a comparison between a potential of the first terminal and a potential of the second terminal (see fig. 7A - note it is obvious that this comparison occurs with the op-amp 64), and wherein the transistor supplies a second current corresponding to the first current to the light emitting element (see fig. 7A and note that the transistor supplies a 2nd current i.e. and output of current source I which is the 1st current to the LED 30) .

Wu does not directly teach wherein the current source is configured to supply a first current corresponding to a gray scale level.

Routley teaches a current source is configured to supply a current corresponding to a gray scale level (see [0057]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a well known current source corresponding to a grayscale level as taught by Routley in place of the current source as taught by Wu in order to provide a variable brightness or grayscale display.

As to claim 2, the combination of Wu and Routley teach a semiconductor device according to Claim 1 (see above rejection), wherein the precharge circuit comprises: a comparison control circuit for the comparison between the potential of the first terminal and the potential of the second terminal; and a switch controlled by the comparison control circuit (see Wu fig. 7A – see op-amp 64 and switches 62).

As to claim 3, the combination of Wu and Routley teach a semiconductor device according to claim 2 (see above rejection), wherein the comparison control circuit comprises an operational amplifier (see Wu fig. 7A – op-amp 64).

As to claim 4, the combination of Wu and Routley teach a semiconductor device according to claim 2 (see above rejection), wherein the comparison control circuit comprises a chopper inverter comparator (see Wu fig. 7A – and note chopper inverter comparators are obvious and well known substitutions for operational amplifiers in the art because they perform the same function).

As to claim 5, the combination of Wu and Routley teach an electronic apparatus having the semiconductor device according to claim 1 (see above rejection), wherein the electronic apparatus is selected from the group consisting of a light emitting device, a digital still camera, laptop personal computer, a mobile computer, a portable image reproducing device, a goggle type display, a video camera and a portable phone (see Wu fig. 7A – LED 30).

As to claim 7, the combination of Wu and Routley teach the semiconductor device according to claim 6 (see above rejection), wherein the charge supply means is a second current source (see Wu fig. 7A and note that it is well known in the art to use either current or voltage sources as charge supply would be obvious to substitute a current source in place of a voltage source).

As to claim 8, the combination of Wu and Routley teach the semiconductor device according to claim 6 (see above rejection), wherein the charge supply means is a power source (see Wu fig. 7A – voltage Vpp).

As to claim 9, the combination of Wu and Routley teach the semiconductor device according to claim 6 (see above rejection), wherein the comparison control circuit comprises an operational amplifier (see fig. Wu 7A - op-amp 64).

As to claim 10, the combination of Wu and Routley teach the semiconductor device according to claim 6 (see above rejection), wherein the comparison control circuit comprises a chopper inverter comparator (see Wu fig. 7A – and note chopper inverter comparators are obvious and well known substitutions for operational amplifiers in the art because they perform the same function).

As to claim 11, the combination of Wu and Routley teach an electronic apparatus having the semiconductor device according to claim 6 (see above rejection), wherein the electronic apparatus is selected from the group consisting of a light emitting device, a digital still camera, laptop personal computer, a mobile computer, a portable image reproducing device, a goggle type display, a video camera and a portable phone (see Wu fig. 7A – LED 30).

As to claim 19, the combination of Wu and Routley teach a display device according to claim 18 (see above rejection), wherein the pixel has a light emitting element, and wherein the transistor supplies a current to the light emitting element (see Wu fig. 7A – LED 30).

As to claim 20, the combination of Wu and Routley teach a display device according to claim 18 (see above rejection), wherein the precharge circuit comprising: a comparison control circuit for the comparison between the potential of the first terminal

and the potential of the second terminal (see Wu fig. 7A – op-amp 64); and a switch controlled by the comparison control circuit (see Wu fig. 7A – switch 62).

As to claim 21, the combination of Wu and Routley teach a display device according to claim 20 (see above rejection), wherein the comparison control circuit comprises an operational amplifier (see Wu fig. 7A – op-amp 62).

As to claim 22, the combination of Wu and Routley teach a display device according to claim 20 (see above rejection), wherein the comparison control circuit comprises a chopper inverter comparator (see Wu fig. 7A – and note chopper inverter comparators are obvious and well known substitutions for operational amplifiers in the art because they perform the same function).

As to claim 23, the combination of Wu and Routley teach an electronic apparatus having the display device according to claim 18 (see above rejection), wherein the electronic apparatus is selected from the group consisting of a light emitting device, a digital still camera, laptop personal computer, a mobile computer, a portable image reproducing device, a goggle type display, a video camera and a portable phone (see Wu fig. 7A – LED 30).

3. Claims 12-17, and 24-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masanobu Oomura (Patent No.: US 6,693,388 B2), in view of Paul R. Routley (Pub. No.: US 2006/0001613 A1).

As to claim 12, Oomura teaches a semiconductor device comprising: a transistor comprising a source electrode, a drain electrode and a gate electrode (see figs. 1 or 6 – transistor T3); a current source electrically connected to the transistor (see figs. 1 or 6 - current source Id); a charge supply means (see fig. 1 – Vr or Vdd or fig. 6 – Vr); and a precharge circuit configured to supply a charge to the transistor, the precharge circuit comprising: a comparison control circuit having a first input terminal electrically connected to the transistor, a second input terminal and an output terminal (see figs. 1 or 6 – amp1); and a switch electrically connected to the output terminal (see figs. 1 or 6 – transistors T1 or T2 and note that all transistors function as switches), wherein the gate electrode is electrically connected to any one of the source electrode and the drain electrode (see figs. 1 or 6 - connection between T3 and T1 or T2), wherein the charge supply means is electrically connected to any one of the source electrode and the drain electrode through the switch (see fig. 1 - connection between Vr or Vdd, T3, and T1 or T2 or see fig. 6. - connection between Vr, T3, and T1 or T2).

Oomura does not directly teach wherein the current source is configured to supply a current corresponding to a gray scale level.

Routley teaches a current source is configured to supply a current corresponding to a gray scale level (see [0057]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a well known current source corresponding to a grayscale level as taught by Routley in place of the current source as taught by Oomura in order to provide a variable brightness or grayscale display.

As to claim 24, Oomura teaches a display device comprising: a light emitting element (see figs. 1 or 6 – OLED); a transistor electrically connected to the light emitting element (see figs. 1 or 6 – T3); a current source electrically connected to the transistor (see figs. 1 or 3 – Id); a charge supply means (see fig. 1 – Vr or Vdd or fig. 6 – Vr); and a precharge circuit configured to supply a charge to the transistor, the precharge circuit comprising: a comparison control circuit having a first input terminal electrically connected to the transistor, a second input terminal and an output terminal (see figs. 1 or 6 – amp1); and a switch electrically connected to the output terminal (see figs. 1 or 6 – transistors T1 or T2 and note that all transistors function as switches), wherein the charge supply means is electrically connected to the transistor through the switch (see fig. 1 - connection between Vr or Vdd, T3, and T1 or T2 or see fig. 6. - connection between Vr, T3, and T1 or T2).

Oomura does not directly teach wherein the current source is configured to supply a current corresponding to a gray scale level.

Routley teaches a current source is configured to supply a current corresponding to a gray scale level (see [0057]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a well known current source corresponding to a grayscale level as taught by Routley in place of the current source as taught by Oomura in order to provide a variable brightness or grayscale display.

As to claim 31, Oomura teaches a display device comprising: a light emitting element (see figs. 1 or 6 – OLED); a transistor comprising a source electrode, a drain electrode and a gate electrode (see figs. 1 or 6 – T3); a current source electrically connected to the transistor (see figs. 1 or 3 – Id); a charge supply means (see fig. 1 – Vr or Vdd or fig. 6 – Vr); and a precharge circuit configured to supply a charge to the transistor, the precharge circuit comprising: a comparison control circuit having a first input terminal electrically connected to the transistor, a second input terminal and an output terminal (see figs. 1 or 6 – amp1); and a switch electrically connected to the output terminal (see figs. 1 or 6 – transistors T1 or T2 and note that all transistors function as switches), wherein the gate electrode is electrically connected to any one of the source electrode and the drain electrode (see figs. 1 or 6 – T3), wherein the charge supply means is electrically connected to any one of the source electrode and the drain electrode through the switch (see fig. 1 - connection between Vr or Vdd, T3, and T1 or T2 or see fig. 6. - connection between Vr, T3, and T1 or T2), wherein the light emitting element is electrically connected to any one of the source electrode and the drain electrode (see figs. 1 or 6 - T3 and OLED).

Oomura does not directly teach wherein the current source is configured to supply a current corresponding to a gray scale level.

Routley teaches a current source is configured to supply a current corresponding to a gray scale level (see [0057]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a well known current source corresponding to a grayscale level as taught by Routley in place of the current source as taught by Oomura in order to provide a variable brightness or grayscale display.

As to claim 13, the combination of Oomura and Routley teach a semiconductor device according to Claim 12 (see above rejection), wherein the charge supply means is a second current source (see Oomura figs. 1 or 6 and note that it is well known in the art to use either current or voltage sources as charge supply would be obvious to substitute a current source in place of a voltage source).

As to claim 14, the combination of Oomura and Routley teach a semiconductor device according to claim 12 (see above rejection), wherein the charge supply means is a power source (see Oomura fig. 1 – Vr or Vdd or fig. 6 – Vr).

As to claim 15, the combination of Oomura and Routley teach the semiconductor device according to claim 12 (see above rejection), wherein the comparison control circuit comprises an operational amplifier (see Oomura figs. 1 or 6 – amp1).

As to claim 16, the combination of Oomura and Routley teach the semiconductor device according to claim 12 (see above rejection), wherein the comparison control circuit comprises a chopper inverter comparator (see Oomura figs. 1 or 6 – and note chopper inverter comparators are obvious and well known substitutions for operational amplifiers in the art because they perform the same function).

As to claim 17, the combination of Oomura and Routley teach an electronic apparatus having the semiconductor device according to claim 12 (see above rejection), wherein the electronic apparatus is selected from the group consisting of a light emitting device, a digital still camera, laptop personal computer, a mobile computer, a portable image reproducing device, a goggle type display, a video camera and a portable phone (see figs. 1 or 6 – OLED).

As to claim 25, the combination of Oomura and Routley teach a display device according to claim 24 (see above rejection), wherein the pixel has a light emitting element, and wherein the transistor is electrically connected to the light emitting element (see Oomura figs. 1 or 6 – OLED).

As to claim 26, the combination of Oomura and Routley teach a display device according to claim 24 (see above rejection), wherein the charge supply means is a second current source (see Oomura figs. 1 or 6 and note that it is well known in the art

to use either current or voltage sources as charge supply would be obvious to substitute a current source in place of a voltage source).

As to claim 27, the combination of Oomura and Routley teach a display device according to claim 24 (see above rejection), wherein the charge supply means is a power source (see Oomura fig. 1 – Vr or Vdd or fig. 6 – Vr).

As to claim 28, the combination of Oomura and Routley teach the display device according to claim 24 (see above rejection), wherein the comparison control circuit comprises an operational amplifier (see Oomura figs. 1 or 6 – amp1).

As to claim 29, the combination of Oomura and Routley teach the display device according to claim 24 (see above rejection), wherein the comparison control circuit comprises a chopper inverter comparator (see Oomura figs. 1 or 6 – and note chopper inverter comparators are obvious and well known substitutions for operational amplifiers in the art because they perform the same function).

As to claim 30, the combination of Oomura and Routley teach an electronic apparatus having the display device according to claim 24 (see above rejection), wherein the electronic apparatus is selected, from the group consisting of a light emitting device, a digital still camera, laptop personal computer, a mobile computer, a

portable image reproducing device, a goggle type display, a video camera and a portable phone (see figs. 1 or 6 – OLED).

As to claim 32, the combination of Oomura and Routley teach a display device according to claim 31 (see above rejection), wherein the charge supply means is a second current source (see Oomura figs. 1 or 6 and note that it is well known in the art to use either current or voltage sources as charge supply would be obvious to substitute a current source in place of a voltage source).

As to claim 33, the combination of Oomura and Routley teach a display device according to claim 31 (see above rejection), wherein the charge supply means is a power source (see Oomura fig. 1 – Vr or Vdd or fig. 6 – Vr).

As to claim 34, the combination of Oomura and Routley teach the display device according to claim 31 (see above rejection), wherein the comparison control circuit comprises an operational amplifier (see Oomura figs. 1 or 6 – amp1).

As to claim 35, the combination of Oomura and Routley teach the display device according to claim 31 (see above rejection), wherein the comparison control circuit comprises a chopper inverter comparator (see Oomura figs. 1 or 6 – and note chopper inverter comparators are obvious and well known substitutions for operational amplifiers in the art because they perform the same function).

As to claim 36, the combination of Oomura and Routley teach an electronic apparatus having the display device according to claim 31 (see above rejection), wherein the electronic apparatus is selected from the group consisting of a light emitting device, a digital still camera, laptop personal computer, a mobile computer, a portable image reproducing device, a goggle type display, a video camera and a portable phone (see Oomura figs. 1 or 6 – OLED).

4. Claims 1-11 and 18-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jie-Farn Wu (Pub. No.: US 2005/0259054 A1), in view of Atsuhiro Yomano (Pub. No.: US 2005/0057580 A1).

Wu teaches the limitations as outlined above.

Yomano teaches a current source configured to supply a current corresponding to a gray scale level (see [0022], [0777], [0793], [0801], and claim 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a well known current source corresponding to a grayscale level as taught by Yomano in place of the current source as taught by Wu in order to provide a variable brightness or grayscale display.

5. Claims 12-17, and 24-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masanobu Oomura (Patent No.: US 6,693,388 B2), in view of Atsuhiro Yomano (Pub. No.: US 2005/0057580 A1).

Oomura teaches the limitations as outlined above.

Yomano teaches a current source configured to supply a current corresponding to a gray scale level (see [0022], [0777], [0793], [0801], and claim 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a well known current source corresponding to a grayscale level as taught by Yomano in place of the current source as taught by Oomura in order to provide a variable brightness or grayscale display.

Response to Arguments

6. Applicant's arguments filed 2/25/11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER ZUBAJLO whose telephone number is (571)270-1551. The examiner can normally be reached on Monday-Friday, 8 am - 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer Zubajlo/
Examiner, Art Unit 2629
6/13/11

/Amare Mengistu/

Supervisory Patent Examiner, Art Unit 2629